UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,444	02/24/2005	Ulrike Schulz	1-16931	3861

1678 7590 04/13/2009

MARSHALL & MELHORN, LLC
FOUR SEAGATE - EIGHTH FLOOR
TOLEDO, OH 43604

EXAMINER	
PADGETT, MARIANNE L	

ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
04/13/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,444	SCHULZ ET AL.	
	Examiner	Art Unit	
	MARIANNE L. PADGETT	1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10/30/2008 & 2/3/2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *16-28 and 31-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *16-28 and 31-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Applicants' amendment of 2/3/2009 has removed most of the objections & the 112, second problems as discussed in section 1 of the action mailed 6/30/2008, however one problem in claim 25 remains & is repeated below.

2. **Claims 25-26 are** rejected under 35 U.S.C. **112, second** paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Dependent **claim 25** still has a range limitation for duration of ion bombardment therein, which contradict requirements already present in the independent claim, i.e. "from 200 to 600 s", therefore the claim 25 duration limitation of "at least 500 s" includes values over the maximum range limit of "600 s" of the independent claim.

Claims 25-26 are **objected** to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 25 & dependent **claim 26** dependent therefrom, include in their duration range times greater than those of the independent claim 16's limitation, hence improperly broadened the scope of the dependent claims with respect to the already required limitations of the independent claim.

3. The following is a quotation of **35 U.S.C. 103(a)** which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The **nonstatutory double patenting rejection** is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

4. **Claims 16-28 & 31-33** are rejected under 35 U.S.C. **103(a)** as being unpatentable over **Taniguchi et al.** (4,374,158).

Applicants' amendment of independent claims 16, while clarifying the scope of the plasma, such that it necessarily contains both Ar & O_2, has not made any amendments that affect the scope with respect to this rejection, since this possible meaning of the previously phrased limitation was already considered.

As previously set forth, **Taniguchi et al.** (158) teach making shaped or coated articles, that maybe optical articles, such as lenses or windows, etc., using a mixture of fine inorganic particles in a matrix material that may be polymeric compounds, such as methacrylic acid or polycarbonates or diethylene glycol bisallyl carbonate (CR39). The shaped or coated articles are taught to of been suitably cured, then its surface is treated with activated gas containing ions, where those ions may have come from oxygen gas, argon or air (note air contains both O_2 & argon), where various types of plasma sources (DC,

L.F., H.F., microwave at 10^{-2}-10 Torr) are mentioned as useful, particularly "cold plasma". The effective treatment is said to provide lower reflectance & higher transmittance, with exemplary transmittance values in table I including values over 97 or 98 %, where air or oxygen gas plasmas & times including 3 & 10 minutes (i.e. 180 & 600 seconds) were employed. Note that the taught transmittance values, necessitate reflectance values in claimed ranges. The thickness of the coating produced by the treatment was taught to be "up to 1000 milli-microns, preferably up to 500 milli-microns", which is taken to mean up to 1 μm or 1000 nm, preferably 500 nm. Particularly see, the abstract; col. 1, lines 5-10; col. 2, lines 20-46, esp. 37-46; col. 4, line 60-col. 5, line 44; col. 6, line 61-col. 7, line 52, esp. 25-41 & 50-52; Exs. on cols. 9-17, esp. table I on col. 17.

Taniguchi et al. differs from independent claims 16 by not providing information on the energies of the ions as they impinge on the substrate for the various plasmas employed, or discussing the presence of a refractive index gradient, and nor the wavelengths involved in the "total luminous transmittance" measurements, however as the optical articles under discussion include window panes, lenses, such as for spectacles, etc., the wavelengths would have been expected to at least encompass visible wavelengths, i.e. 400-700 nm, thus may be considered to cover values in the claimed range or the narrower dependent claim ranges. Alternatively, treatment with respect to these wavelengths would have been obvious to one of ordinary skill due to the products under consideration. With respect to the gradient issue, a plasma has ions with a distribution of energies therein, with lesser concentrations at the extremes of the ions' energy distribution. When these ions impinge on the substrate surface, their individual depth of penetration is dependent on their individual energy, the angle of impingement, the composition of the particular substrate material (it's stopping power for particular ions of particular energies), and the like, hence there will inherently be a gradient associated with depth of ion penetration due to these factors & the energy distribution, which will in turn inherently create a compositional gradient formed due to the distribution of penetrating ions & their affects, thus a reasonable expectation of such effects producing a graded

refractive index. With respect to energy, as noted by Taniguchi et al., the plasma conditions employed may be varied, dependent on shape of substrate, particular gas composition & substrate composition, etc., where the reference explicitly suggest that optimum conditions may be readily obtained by experimentation, thus it would've been obvious to one of ordinary skill in the art to conduct such experiments for particular plasma sources in order to optimize the parameters, such as energy, time & pressure, with reasonable expectation that such parameters will include various energies, times & pressures as claimed by applicants, due to analogous treatments of analogous substrates for like results.

5. **Claims 16-28 & 31-33** are provisionally rejected on the ground of nonstatutory **obviousness-type double patenting** as being unpatentable over claims 1-7, 12-18 & 24-25 of copending Application No. **11/662,550**. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claim limitations of the two applications are directed to processes of overlapping scope, with the limitations claimed in different orders, such that they are obvious variations on like themes. It is noted to copending (550)'s claims have additional limitations directed to deposition of a metal layer, however the presence of such a layer is neither required nor excluded by the present claims, hence is not considered a relevant issue. In copending (550) for examples of overlapping limitations, see claims 1-4 for method of making an optical element including graduated refractive index, with claim 3 directed to thicknesses $\geq$ 50 nm; claim 5 employing plasma with energies $\geq$ 100 eV; claim 6 employing Ar & O_2; claim 7, times $\geq$ 200 seconds; claim 12 treating both sides of an optical substrate; claim 13 for treated substrates being PMMA or CR39; claim 14 for less than 1.5% reflectance in spectral ranges from 400-1100 nm, etc.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

6. New **art of interest** to the state-of-the-art includes Ogami, JP 2008-209442 A, which while not prior art, is directed to plasma or ion beam processing of a resin film to reduce the transmittance at 400-700 nm wavelengths & to create a multilayer absorption structure for optical purposes.

Other art of interest that was previously cited for ion treating of the polymeric materials to increase transmission &/or reduce reflectance included: **Tregub et al.** (7,314,667 B2), who fluorinate with ion beams or plasma; **Strangl et al.** (4,868,162), who implanted metal ions from liquid sources (In or Sn) or O^+ from a "duoplasmatron", using energies of about 10 keV to locally increase transmission of a filter layer that may be PMMA or PET (col. 6, lines 22-68); and **He et al.** (6,572,935 B1), who bias the substrate (PMMA, polycarbonate, or glass) & treat with plasma containing C, H & Ar to increase transmission thereof. The related copending case to **Schulz et al.** (6,645,608 B2), which has overlapping inventors, was cited as of interest, but reduces reflectance therein the use of inorganic oxide layers.

7. **Applicant's arguments** filed 2/3/2009 & 10/30/2008, partially discussed above, have been fully considered but they are not persuasive.

In the paragraph bridging p. 6-7 of applicant's 10/30/2008 response, applicants assert that in their process of independent claim 16, the process is treating a substrate "which is completely made of an organic polymer without any enclosed other elements...", however this is incorrect, since the generic claim of independent claim 16 of "polymer substrates" neither explicitly includes, nor explicitly excludes the inclusion of non-polymer additives in the generic polymer substrate. Furthermore, applicants' dependent claims 23, 25 & 31-32 that further describe the polymer substrate **include language**, which **explicitly enables** one to add any other additives, organic or inorganic, as desired, as they use language such as "the polymer substrate **comprises**..." (emphasis added), thus including the possible use in such polymer substrates of additives such as the find inorganic particles employed by Taniguchi et al., such that applicants' claims cannot be said to exclude the processes taught therein.

With respect to the obviousness double patenting rejection, applicants' arguments (page 7 of 10/30/08 response) appear to rely on semantics differences, since the copending case 11/662,550's claim to "a radiation-absorbing optical element...", may certainly be considered to encompass or be equivalent to "reducing the surface reflectance of an optical element...", especially when one considers that the products & processes of these two applications employ the same types of plasmas ($(Ar + O_2)$ copending claim 6); may use the same energies (copending claim 5); may apply the plasmas to the same substrates (copending claim 13) in order to obtain like results with respect to the refractive index gradient layer formed (claim 14), hence applicants' arguments are utterly unconvincing. Note that the application of the metal layer in independent claim 1 of the copending case is not significant to the obviousness double patenting, as the present claims do not prohibit the deposition of such a layer on top of the refractive index gradient layer after it is formed.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. **Any inquiry** concerning this communication or earlier communications from the examiner should be directed to **Marianne L. Padgett** whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 9:00 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Marianne L. Padgett/
Primary Examiner, Art Unit 1792

MLP/dictation software

4/10/2009